

REMARKS

Claims 1, 5, 7, 8, 12, 13, 16, 19, 23, 24 and 29-32 are pending in this application. For purposes of expedition, claims 2-4, 6, 9-11, 14-15, 17-18, 20-22 and 25-28 have been canceled without prejudice or disclaimer, and many of their limitations have been incorporated into base claims 1, 5, 13, 16 and 23 in order to further define Applicants' disclosed invention to clearly distinguish over the cited prior art and to place all claims in condition for allowance. As a result, base claims 1, 5, 13, 16 and 23 have been amended along with their respective dependent claims 7-8, 12, 15, 19, and 24. Claims 29-32 have been newly added to further depend upon the now believed allowable base claims 5, 13 and 23.

The drawings have been objected to because FIG. 2 and FIG. 8 are not in English. In response thereto, a complete set of formal drawings, including FIG. 2 and FIG. 8 (in English) is hereby submitted for the Examiner's consideration and entry.

The disclosure has been objected to because of a number of informalities as kindly listed on page 2 of the Office Action (Paper No. 4). In response thereto, the disclosure has been amended in all those instances identified by the Examiner to overcome the objection. The Examiner's careful reading of the disclosure is noted with appreciation.

The listing of references in the specification has been objected to because it is not a proper information disclosure statement. However, the several references as described in Applicants' specification are not submitted as information disclosure statement (IDS). Rather, these references provide the background to Applicants' disclosed invention and, as a result, need not be listed in a separate IDS form.

Claims 16-22 have been objected to because of several informalities as listed on page 3 of the Office Action (Paper No. 4). In response thereto, claims 16-22 have been amended where appropriate to overcome the objection.

Claims 2, 4 and 12 have been rejected under 35 U.S.C. §112, 2d ¶, as being indefinite. Specifically, the Examiner asserts that claims 2, 4 and 12 lack proper antecedent basis for the term "said displayed detailed information". Accordingly, claims 2, 4 and 12 have been amended to overcome the rejection.

Claims 1, 5 and 8 have been rejected under 35 U.S.C. §102(b) as being anticipated by Matsuo, JP Patent No. 11-176899 for reasons stated on pages 4-5 of the Office Action (Paper No. 4). While Applicants disagree with the Examiner's assessment of Matsuo '899, base claims 1 and 5 have been amended to incorporate several features from dependent claims, for example, claim 6 and 9-11 (now canceled) in order to render the rejection moot and to clearly distinguish over Matsuo '899. For example, base claim 1 has been amended to define a method for analyzing defects in electronic circuit patterns, comprising:

- a step for inspecting a first object to detect defects during a production process and obtaining position information of said defects;
- a step for detecting images of said defects using said position information of said defects obtained;
- a step for performing an electronic test on said first object after said production process is completed to detect faults in said first object and obtain position information of said faults;
- a step for comparing said position information of said defects with said position information of said faults and extracting defects having common position information between said defects and said faults;
- a step for classifying images of extracted defects into critical defect images and non-critical defect images based on a classification rule;
- a step for displaying images of classified defects on a screen by discriminating between said critical defect images and said non-critical defect images;

- a step for modifying said classification rule by correcting classification of classified defect images displayed on the screen;
- a step for inspecting a second object during the production process to detect defects and obtain information of said defects including position information and image of said defects;
- a step for classifying images of said defects detected on said second object into critical defects and non-critical defects by using a modified classification rule; and
- a step for outputting information on said classified defect images of said second object.

Similarly, base claim 5 has been amended to define a method for analyzing defects in electronic circuit patterns comprising:

- a step for inspecting a first object to detect defects during a production process and obtaining information relating to said defects on the first object including position information and detailed information, and storing information relating to said position information and detailed information of said defects;
- a step for performing an electronic test on said first object after said production process is completed to detect electronic faults in said first object and obtain position information of said electronic faults and storing said position information of said electronic faults;
- a step for comparing stored position information of said defects with stored position information of said electronic faults and classifying said stored position information of said defects into critical defects and non-critical defects;
- a step for classifying stored detailed information of said defects into critical defects and non-critical defects under a classification rule referring to classified position information of said defects;
- a step for modifying said classification rule by correcting classified detailed information;
- a step for inspecting a second object during the production process to detect defects and obtain position information and detailed information of said defects on the second object;
- a step for classifying said detailed information of said defects on the second object into critical defects and non-critical defects using a modified classification rule; and
- a step for outputting information on classified defects.

As clearly defined in each of Applicants' base claims 1 and 5, information of defects and position information of electronic faults are obtained from a first object as inspected. Defects having common position information between the defects and

the electronic faults are extracted, classified using a classification rule as either critical defects or non-critical defects and then displayed. The initially set classification rule is then modified so that images of defects on a second object can be classified using the modified classification rule before completion of the production process. As a result, criticality of different types of defects on a sample object can be accurately evaluated.

In contrast to Applicants' base claims 1 and 5, Matsuo '899 only discloses a method and system for alarming defects in the manufacturing process of a semiconductor device, as shown in FIG. 1. An alarm is issued, via an alarm display device 16, when computed defect occurring rate exceeds the specified reference.

There is **no** disclosure anywhere in Matsuo '899 of Applicants' extraction of defects having common position information between the defects and the electronic faults, classification using a classification rule as either critical defects or non-critical defects and then displayed, and modification of the initially set classification rule so that images of defects on a second object can be classified using the modified classification rule before completion of the production process, as generally defined in Applicants' base claims 1 and 5.

The rule under 35 U.S.C. §102 is well settled that anticipation requires that each and every element of the claimed invention be disclosed in a single prior art reference. In re Paulsen, 30 F.3d 1475, 31 USPQ2d 1671 (Fed. Cir. 1994); In re Spada, 911 F.2d 705, 15 USPQ2d 1655 (Fed. Cir. 1990). Those elements must either be inherent or disclosed expressly and must be arranged as in the claim. Richardson v. Suzuki Motor Co., 868 F.2d 1226, 9 USPQ2d 1913 (Fed. Cir. 1989); Constant v. Advanced Micro-Devices, Inc., 848 F.2d 1560, 7 USPQ2d 1057 (Fed.

Cir. 1988); Verdegall Bros., Inc. v. Union Oil Co., 814 F.2d 628, 2 USPQ2d 1051 (Fed. Cir. 1987). The corollary of that rule is that absence from the reference of any claimed element negates anticipation. Kloster Speedsteel AB v. Crucible Inc., 793 F.2d 1565, 230 USPQ2d 81 (Fed. Cir. 1986).

The burden of establishing a basis for denying patentability of a claimed invention rests upon the Examiner. The limitations required by the claims cannot be ignored. See In re Wilson, 424 F.2d 1382, 165 USPQ 494 (CCPA 1970). All claim limitations, including those which are functional, must be considered. See In re Oelrich, 666 F.2d 578, 212 USPQ 323 (CCPA 1981). Hence, all words in a claim must be considered in deciding the patentability of that claim against the prior art. Each word in a claim must be given its proper meaning, as construed by a person skilled in the art. Where required to determine the scope of a recited term, the disclosure may be used. See In re Barr, 444 F.2d 588, 170 USPQ 330 (CCPA 1971).

In the present situation, Matsuo '899 fails to disclose and suggest key features of Applicants' base claims 1 and 5. Therefore, Applicants respectfully request that the rejection of claims 1, 5 and 7 be withdrawn.

Claims 2, 3, 4 and 12 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Matsuo '899 as applied to claims 1 and 5 above, and further in view of Eskridge, U.S. Patent No. 6,597,381 for reasons stated on pages 6-7 of the Office Action (Paper No. 4). As previously discussed, claims 2-4 have been canceled without prejudice or disclaimer in order to render the rejection moot. As for claim 12, claim 12 depends upon the now allowed base claim 5, which should also render the rejection moot.

Claims 6, 7, 16 and 18-20 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Matsuo '899 as applied to claim 5 above, and further in view of Ishikawa et al., U.S. Patent No. 5,841,893 for reasons stated on pages 7-8 of the Office Action (Paper No. 4). As previously discussed, claims 6, 18 and 20 have been canceled without prejudice or disclaimer in order to render the rejection moot. As for claim 7, claim 7 depends upon the now allowed base claim 5, which should also render the rejection moot. As for claims 16 and its depend claim 19, Applicants traverse the rejection for reasons as discussed herein below.

Base claim 16 has been amended to a system for analyzing defects in electronic circuit patterns comprising:

- a first memory which stores position information and detailed information of individual defects detected on a first object during a production process;

- a second memory which stores position information of electronic testing faults detected on said first object with an electronic test after said production process has been completed;

- a comparator which compares said position information of said defects stored in said first memory with said position information of electrical testing faults stored in said second memory;

- first classifying means for classifying said position information of said defects either critical defects or non-critical defects using a first classification rule;

- second classifying means for classifying said detailed information of said defects either critical defects or non-critical defects referring to classified position information of defects using a second classification rule;

- modifying means for modifying said second classification rule by correcting classified detailed information classified by said second classification means;

- a third memory for storing both position information and detailed information obtained from a second object during the production process;

- third classifying means for classifying said detailed information of defects detected on said second object either critical defects or non-critical defects using a modified second classification rule; and

- outputting means which outputs information of defects classified by said third classifying means.

In contrast to Applicants' base claim 16, Matsuo '899, as a primary reference, as previously discussed, only discloses a method and system for alarming defects in the manufacturing process of a semiconductor device, as shown in FIG. 1, in which an alarm is issued, via an alarm display device 16, when computed defect occurring rate exceeds the specified reference.

Matsuo '899 does **not** disclose or suggest all key features of Applicants' base claim 16, including the first, second, and third classifying means and the modifying means for performing the recited functions, for example, classifying position information of defects on a first object as critical defects or non-critical defects, and detailed information of defects on the first object as critical defects or non-critical defects, using classification rules, as well as detailed information of defects on a second object as critical defects or non-critical defects using a modified classification rule.

As a secondary reference, Ishikawa '893 does **not** remedy the noted deficiencies of Matsuo '899 in order to arrive at Applicants' base claim 16. This is because Ishikawa '893 is only cited for allegedly disclosing the recognition of criticality of defects, thereby classifying as either critical defects or non-critical defects.

Neither Matsuo '899 nor Ishikawa '893 discloses or suggests key features of Applicants' base claim 16, including the first, second, and third classifying means and the modifying means for performing the recited functions as described.

In order to establish a *prima facie* case of obviousness under 35 U.S.C. §103, the Examiner must show that the prior art reference (or references when combined) must teach or suggest all the claim limitations, and that there must be some

suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skilled in the art, to modify the reference or to combine reference teachings, provided with a reasonable expectation of success. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and **not** based on Applicants' disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See MPEP 2143. In other words, all the claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USQP 494, 496 (CCPA 1970).

Moreover, "obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination." ACS Hospital System, Inc v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). The Examiner must point to something in the prior art that suggests in some way a modification of a particular reference or a combination of references in order to arrive at Applicants' claimed invention. Absent such a showing, the Examiner has improperly used Applicants' disclosure as an instruction book on how to reconstruct to the prior art to arrive at Applicants' claimed invention.

Furthermore, any deficiencies in the cited references cannot be remedied with conclusions about what is "basic knowledge" or "common knowledge". See In re Lee, 61 USPQ 2d 1430 (Fed. Cir. 2002).

In the present situation, Matsuo '899 and Ishikawa '893 fail to disclose and suggest key features of Applicants' base claim 16. Therefore, Applicants respectfully request that the rejection of claims 16 and 19 be withdrawn.

Claims 9-11 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Matsuo '899 as applied to claim 5 above, and further in view of Zika, U.S. Patent No. 6,496,596 for reasons stated on pages 8-9 of the Office Action (Paper No. 4). As previously discussed, claims 9-11 have been canceled without prejudice or disclaimer in order to render the rejection moot.

Claims 21-22 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Matsuo '899 and Ishikawa '893 as applied to claim 16 above, and further in view of Zika, U.S. Patent No. 6,496,596 for reasons stated on pages 9-10 of the Office Action (Paper No. 4). Again, as previously discussed, claims 21-22 have been canceled without prejudice or disclaimer in order to render the rejection moot.

Claims 13, 14, 17 and 23-27 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Matsuo '899 and Ishikawa '893 as applied to claim 16 above, and further in view of Eskridge '381 for reasons stated on pages 10-11 of the Office Action (Paper No. 4).). Again, as previously discussed, claims 14, 17 and 25-28 have been canceled without prejudice or disclaimer in order to render the rejection moot. As for base claims 13 and 23, Applicants respectfully traverse the rejection for reasons discussed herein below.

Base claim 13 has been amended to define a method for analyzing defects in electronic circuit patterns comprising:

 a step for inspecting a first object during a production process to detect defects;

- a step for obtaining information of said defects including position information of said defects;

- a step for performing an electronic test on said first object after said production process has been completed to detect electronic testing faults in said first object;

- a step for obtaining position information on said electronic testing faults;

- a step for comparing obtained position information of said defects with obtained position information of said electronic testing faults and extracting defects having common position information between said defects and said electronic testing faults;

- a step for classifying extracted defects into critical defects and non-critical defects based on a classification rule;

- a step for displaying classified defects on a screen by discriminating between said critical defects and said non-critical defects;

- a step for modifying said classification rule by correcting a classified result of said defects displayed on the screen;

- a step for inspecting a second object during the production process to detect defects and obtain information of said defects including position of said defects;

- a step for classifying said defects detected on said second object into critical defects and non-critical defects by using said modified classification rule; and

- a step for outputting information on classified defects on said second object.

Similarly, base claim 23 has been amended to define a system for analyzing defects in electronic circuit patterns comprising:

- a first memory which stores position information and detailed information of individual defects detected on a first object during a production process;

- a second memory which stores position information of electrical testing faults detected on said first object by an electronic test after said production process has been completed;

- a comparator which compares said position information of said defects stored in said first memory with said position information of said electrical testing faults stored in said second memory;

- first classifying means for classifying said position information of said defects either critical defects or non-critical defects by using a first classification rule;

- second classifying means for classifying said detailed information of said defects either critical defects or non-critical defects referring to classified position information of said defects by using a second classification rule;

display means for displaying said defects classified by said second classifying means on a screen;
modifying means for modifying said second classification rule by correcting classified detailed information classified by said second classification means and displayed on the screen; and
outputting means which outputs information of defects classified by said second classifying means using a modified second classification rule.

In contrast to Applicants' base claims 13 and 23, neither Matsuo '899, Ishikawa '893, nor Eskridge, U.S. Patent No. 6,597,381, discloses or suggests all key features of Applicants' base claims 13 and 23, including the first and second classifying means and the modifying means for performing the recited functions, for example, classifying position information of defects on a first object as critical defects or non-critical defects, and detailed information of defects on the first object as critical defects or non-critical defects, using classification rules, as well as modifying the classification rule by correcting a classified result of defect images on a screen.

Since Matsuo '899, Ishikawa '893 and Eskridge '381 fail to disclose and suggest key features of Applicants' base claims 13 and 23, Applicants respectfully request that the rejection of claims 13 and 23 be withdrawn.

Lastly, claims 15, 27 and 28 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Matsuo '899, Ishikawa '893 and Eskridge '381 as applied to claim 13 and 23 above, and further in view of Zika '596 for reasons stated on pages 11-12 of the Office Action (Paper No. 4). Again, for purposes of expedition, claims 15 27 and 28 have been canceled without prejudice or disclaimer to render the rejection moot and to place all claims in condition for allowance.

Claims 29-32 have been newly added to alternatively define Applicants' disclosed invention over the prior art of record. These claims are believed to be

allowable at least for the same reasons discussed against all the outstanding rejections of the instant application. No fee is incurred by the addition of claims 29-32.

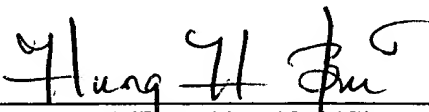
In view of the foregoing amendments, arguments and remarks, all claims are deemed to be allowable and this application is believed to be in condition to be passed to issue. Should any questions remain unresolved, the Examiner is requested to telephone Applicants' attorney at the Washington DC area office at (703) 312-6600.

To the extent necessary, Applicants petition for an extension of time under 37 CFR §1.136. Please charge any shortage of fees due in connection with the filing of this paper, including extension of time fees, to the Deposit Account of Antonelli, Terry, Stout & Kraus, No. 01-2135 (Application No. 501.39619X00), and please credit any excess fees to said deposit account.

Respectfully submitted,

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